INCH-POUND
MIL-C-19978/12B
18 June 2001
SUPERSEDING
MIL-C-19978/12A
16 February 1995

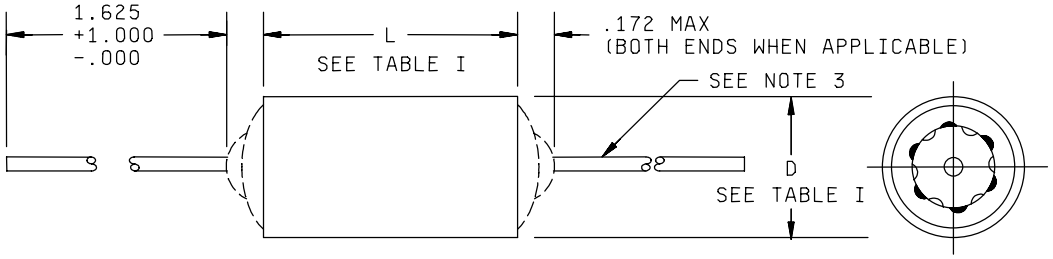
MILITARY SPECIFICATION SHEET

CAPACITORS, FIXED, PLASTIC (OR PAPER-PLASTIC) DIELECTRIC, AXIAL-WIRE TERMINAL, TUBULAR (UNINSULATED) (HERMETICALLY SEALED IN METAL CASES), ESTABLISHED RELIABILITY, STYLE CQR19

INACTIVE FOR NEW DESIGN
AFTER 20 OCTOBER 1972

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification and MIL-PRF-19978.



Inches	mm	Inches	mm
.001	0.03	.195	4.95
.004	0.10	.235	5.97
.020	0.51	.312	7.92
.025	0.64	.400	10.16
.032	0.81	1.000	25.40
.562	14.27	1.562	39.67
.172	4.37	1.625	41.38
.175	4.45		

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Leads shall be of tinned solid wire, .020 (No. 24AWG) for cases .175 and .195 in diameter; .025 (No. 22 AWG) for cases .235 through .312 diameter; and .032 (No. 20 AWG) for cases .400 diameter and above. Tolerance on all lead wire diameters shall be -.004, -.001.
4. Capacitors with dimension L of 1.562 or D of .562 and larger, are not intended to be supported by their leads. These capacitors shall be provided with a supplementary means of mounting, such as a wrap-around band.
5. Lead length may be a minimum of 1.00 inch long for use in tape and reel packaging when specified in the ordering data.

FIGURE 1. Style CQR19 capacitors.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and table I.

TABLE I. STYLE CQR19 capacitors.

Part or Identifying Number (PIN) 1/	DC voltage rating (volts)	Capacitance rating (µF)	Capacitance tolerance	Failure rate level	Case dimensions 2/			
					Circuit 1		Circuit 3	
					L ±.031	D+.015 -.005	L ±.031	D+.015 -.005
CQR19A-KC124-3-	200	.12	J, K	M, P, R, S	1.125	.562	1.063	.562
CQR19A-KC154-3-	200	.15	J, K	M, P, R, S	1.125	.562	1.063	.562
CQR19A-KD392-3-	300	.0039	J, K	M, P, R, S	.813	.235	.719	.235
CQR19A-KD472-3-	300	.0047	J, K	M, P, R, S	.813	.235	.719	.235
CQR19A-KD183-3-	300	.018	J, K	M, P, R, S	1.062	.312	.969	.312
CQR19A-KD223-3-	300	.022	J, K	M, P, R, S	1.062	.312	.969	.312
CQR19A-KD563-3-	300	.056	J, K	M, P, R, S	1.312	.400	1.219	.400
CQR19A-KD683-3-	300	.068	J, K	M, P, R, S	1.312	.400	1.219	.400
CQR19A-KD394-3-	300	.39	J, K	M, P, R, S	1.875	.750	1.812	.750
CQR19A-KD474-3-	300	.47	J, K	M, P, R, S	1.875	.750	1.812	.750
CQR19A-KD564-3-	300	.56	J, K	M, P, R, S	2.375	.750	2.312	.750
CQR19A-KD684-3-	300	.68	J, K	M, P, R, S	2.375	.750	2.312	.750
CQR19A-KD824-3-	300	.82	J, K	M, P, R, S	2.125	1.000	2.062	1.000
CQR19A-KD105-3-	300	1.0	J, K	M, P, R, S	2.125	1.000	2.062	1.000
CQR19A-KE184-3-	400	.18	J, K	M, P, R, S	1.500	.670	1.438	.670
CQR19A-KE224-3-	400	.22	J, K	M, P, R, S	1.500	.670	1.438	.670
CQR19A-KE564-3-	400	.56	J, K	M, P, R, S	2.625	.750	2.562	.750
CQR19A-KE684-3-	400	.68	J, K	M, P, R, S	2.625	.750	2.562	.750
CQR19A-KE824-3-	400	.82	J, K	M, P, R, S	2.250	1.000	2.188	1.000
CQR19A-KE105-3-	400	1.0	J, K	M, P, R, S	2.250	1.000	2.188	1.000
CQR19A-KF273-3-	600	.027	J, K	M, P, R, S	1.562	.400	1.469	.400
CQR19A-KF333-3-	600	.033	J, K	M, P, R, S	1.562	.400	1.469	.400
CQR19A-KF393-3-	600	.039	J, K	M, P, R, S	1.125	.562	1.062	.562
CQR19A-KF473-3-	600	.047	J, K	M, P, R, S	1.125	.562	1.062	.562
CQR19A-KF394-3-	600	.39	J, K	M, P, R, S	2.125	1.000	2.062	1.000
CQR19A-KF474-3-	600	.47	J, K	M, P, R, S	2.125	1.000	2.062	1.000

1/ Complete PIN shall include additional symbols to indicate circuit, capacitance tolerance, and failure rate level, as applicable.
2/ See table II for metric equivalents.

TABLE II. Millimeter equivalents of decimal inches.

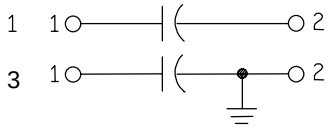
Inches	mm	Inches	mm	Inches	mm	Inches	mm
.005	0.13	.719	18.26	1.219	30.96	2.062	52.37
.015	0.38	.750	19.05	1.312	33.32	2.125	53.98
.031	0.79	.813	20.65	1.438	36.53	2.188	55.58
.235	5.97	.969	24.61	1.469	37.31	2.250	57.15
.312	7.92	1.000	25.4	1.500	38.10	2.312	58.72
.400	10.16	1.062	26.97	1.562	39.67	2.375	60.33
.562	14.27	1.063	27.00	1.812	46.02	2.562	65.07
.670	17.02	1.125	28.58	1.875	47.63	2.625	66.67

Case material: Nonmagnetic (end seal may be of magnetic material).

Dielectric material: Paper and polyethelene terephthalate (K).

Terminals: Axial-wire lead (see figure 1).

Circuit diagram:



Rated voltage: See table I.

Rated temperature: -65° to +125°C.

Capacitance (nominal): See table I.

Capacitance tolerance: See table I.

Dissipation factor (DF) (max): 1.0 percent.

Failure rate level: M, P, R or S in accordance with MIL-PRF-19978.

Burn-in: In accordance with MIL-PRF-19978.

Radiographic inspection: In accordance with MIL-PRF-19978.

Seal: Method 112 of MIL-STD-202, test condition letter A.

Dielectric withstanding voltage (DWV):

Sleeving: In accordance with MIL-PRF-19978.

Barometric pressure, qualification only: In accordance with MIL-PRF-19978.

Test points:

Circuit diagram 1: Between terminals and case.

Circuit diagram 3: Between ungrounded terminal and case.

Vibration, high frequency: Method 204 of MIL-STD-202, test condition B, with the following exception:

Direction and duration of motion: 4 hours in each of two mutually perpendicular directions (total of 8 hours), one parallel and the other perpendicular to the cylindrical axis.

Salt spray: In accordance with MIL-PRF-19978.

Immersion:

DWV:

Sleeving: In accordance with MIL-PRF-19978.

IR:

Sleeving: In accordance with MIL-PRF-19978.

Solderability: In accordance with MIL-PRF-19978.

Terminal strength: Method 211 of MIL-STD-202, test condition letter D.

Moisture resistance:

DWV:

Sleeving: In accordance with MIL-PRF-19978.

IR:

Sleeving: In accordance with MIL-PRF-19978.

Stability at low and high temperatures:

Low temperature:

Test temperature: -65°C +0°C, -5°C.

Capacitance change (maximum): -10 percent.

High temperature:

Test temperature: +125°C +5°C, -0°C.

Capacitance change (maximum): +10 percent.

Life:

Capacitance change (maximum): ±5 percent of initial measured value.

Resistance to soldering heat: In accordance with MIL-PRF-19978.

Insulation resistance (IR):

Sleeving: In accordance with MIL-PRF-19978.

Terminal to terminal: See table III.

TABLE III. Terminal-to-terminal insulation resistance.

Capacitance rating	Minimum insulation resistance
	At 25°C
0 to 0.6 microfarad	25,000 megohms
Greater than 0.6 microfarad	15,000 megohm-microfarads 1/
	At 125°C
0 to 0.08 microfarad	250 megohms
Greater than 0.08 microfarad	20 megohm-microfarads 1/

1/ Product obtained by multiplying the capacitance in microfarads by the insulation resistance in megohms.

Terminal to case: Greater than 10,000 megohms.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Army - AR, AT, AV, MI
Navy - AS, MC, OS, SH, TD

Preparing activity:
DLA - CC

(Project 5910-2118-01)